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Contract No. DAAH01-98-D-R001
Delivery Order No. 18

**Local Area Network (LAN) for
System Engineering and Production Directorate (SEPD)**

(5-20281 & 5-20282)

Final Technical Report for Period
19 August 1998 through 31 July 1999

August 1999

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PREFACE

This technical report was prepared by the staff of the Research Institute, The University of Alabama in Huntsville. The purpose of this report is to provide documentation of the work performed and results obtained under Delivery Order 18 of AMCOM Contract No. DAAH01-98-D-R001. Mr. James R. Clark was the principal investigator. Ms. Charlene Bertus, Systems Engineering and Production Directorate, Missile Research, Development and Engineering Center, provided technical guidance.

The views, opinions, and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy, or decision unless so designated by other official documentation.

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Prepared for: Commander
U.S. Army Missile Command
Redstone Arsenal, AL 35898

I have reviewed this report, dated August 1999 and the report contains no classified information.



Principal Investigator

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1.0 Introduction

The Systems Engineering and Production Directorate (SEPD), Missile Research, Development and Engineering Center (MRDEC), AMCOM has the mission and function to provide systems engineering and analysis for Army developed weapon systems. To facilitate this mission, a high-speed local area network (LAN) segment was required in order for the SEPD elements located within S-wing, Building 5400, to more effectively communicate with internal and external customers. In addition, the Technical Data Management Division, located in Building 5687 required similar LAN connectivity to improve efficiency in areas related to the development, storage, retrieval, and use of large graphics files. Finally, the SEPD required the capability to share software applications from a central server. UAH performed the effort defined below to complete the development and installation of high-speed, integrated LAN connectivity and begin a migration to application sharing.

2.0 Objective

To meet the networking challenge SEPD required research and analysis of advanced computer networking capabilities currently employed by the Redstone Community. The objective of this task was to research, design and implement where necessary enhancements to the SEPD LAN so that it was fully integrated with other MRDEC/Project Office/contractor computer technologies.

3.0 Statement of Work

The statement of work, as outlined in delivery order 18, was as follows:

- 3.1 UAH shall migrate SEPD network drops in S-Wing, Building 5400, to switched technology. This effort shall include reconfiguring and connecting existing resources to provide necessary bandwidth.
- 3.2 UAH shall research and implement a strategy that shall provide segmentation of the 5400 complex LAN from the high-speed LAN implemented in Paragraph 3.1. This activity shall include development and test of interfaces to the existing electronic communications systems and demonstration of the operation of the total system under normal loading conditions. UAH shall completely document, including network wiring diagrams with room and drop numbers and networking hub configurations, the efforts described above.
- 3.3 UAH shall install and configure additional network drops with switched technology within Building 5687. This activity shall include development and test of interfaces to the existing electronic communications systems. UAH shall completely document, including network wiring diagrams with room and drop numbers and networking hub configurations, the efforts described above.

- 3.4 UAH shall develop and begin implementation of a strategy to provide for software application sharing within SEPD. This effort shall include an analysis of server and network bandwidth requirements necessary to support the sharing of applications across the respective LANs within Buildings 5400, 5687, and 7631. UAH shall document the result of the analysis to include any assumptions used in the analysis and upgrades that may be required to implement the strategy.

4.0 Conclusion and Recommendations

During the time frame allocated by the delivery order, members of the UAH Systems Management and Production Lab, with the cooperation of representatives from AMCOM SEPD and MRDEC, performed an analysis of information and networking technologies to support SEPD efforts. This analysis led to the design and implementation of the SEPD LAN. All efforts for the LAN were documented and delivered to SEPD under separate cover.

The investigation of information and networking technologies included the analysis of current SEPD data sharing requirements. It is recommended that these requirements be revisited periodically to determine the required LAN infrastructure. As the SEPD requires additional capacity and as networking technologies become more advanced, the SEPD LAN should be enhanced to exploit newly developed technologies.